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AUTHOR Schrader, Susan
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ABSTRACT

This curriculum guide is intended to help educators design strategies to introduce the concept of online database searching to high school students. The goals of database searching are clearly defined so they may be matched with the goals already established in existing curriculum areas. The teaching process involves explaining how to use a computer to locate bibliographic references. By using a computer to search the databases, students learn how the bibliographic records are organized and what the organizational structure means for successful retrieval. This guide contains statements of the purpose, philosophy, rationale, goals, and objectives of teaching online searching skills to high school students. Included are: an outline of the steps in the search process, activities for four class periods, a student worksheet to be completed with every search request, a discussion of search strategy development, two sample searches and information on computer database vendors and search packages. References used in preparing the curriculum guide are included. (THC)

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A Curriculum Guide for Online Database Searching with High School Students

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Written by:
Susan Schrader, Coordinator of Reference
Heartland Area Education Agency
1932 S.W. Third Street
Ankeny, Iowa 50021

804-029

A Curriculum Guide

for

Online Database Searching

with High School Students

Written by:
Susan Schrader, Coordinator of Reference
Heartland Area Education Agency
1932 S.W. Third Street
Ankeny, Iowa 50021

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Purpose

Considerable concern has been expressed recently in the various excellence reports about the importance of thinking skills, research skills and problem solving. New efforts are being made by schools to find more effective means for answering this concern. Online database searching is one tool that can incorporate thinking skills into existing curriculum areas.

This curriculum guide will help you introduce the concept of online database searching to students. The goals of database searching are clearly defined so that they may be matched with the goals already established in your local curriculum. This curriculum is meant to be the framework around which you can plan your online database searching activities.

This curriculum guide will not teach you, the teacher or media specialist, everything you need to know about online searching. It is necessary to go to a training session in order to understand searching so that you can, in turn, teach students.

Schools will integrate online database searching at various levels, depending upon the time, commitment and money available locally. This curriculum guide will help you design strategies to integrate online database searching at any level in your school.

Philosophy

The future isn't what it used to be.

Students live in an information society. This society can be divided into two segments: the information-haves and the information-have-nots. Why is it important to have information? Information is the essential ingredient for decision-making. Current, factual and comprehensive information is that essential ingredient that determines whether a corporate merger is advisable, whether merit pay is workable, or whether a student term paper has been thoroughly researched.

John Naisbitt's book, *Megatrends*, addresses the importance of information in today's society.

> "In an industrial society, the strategic resource is capital . . . but in our new society . . . the strategic resource is information. Not the only resource, but the most important. With information as the strategic resource, access to the economic system is much easier."
>
> "In the information society, we have systematized the production of knowledge and amplified our brainpower. To use an industrial metaphor, we now mass-produce knowledge, and this knowledge is the driving force of our economy."
>
> "WE ARE DROWNING IN INFORMATION, BUT STARVED FOR KNOWLEDGE. Uncontrolled and unorganized information is no longer a resource in an information society. Instead, it becomes the enemy of the information worker . . ."

Educators cannot hope to teach students all they will need to know to function in society. Educators can teach students how to find what they need to know. Educators can teach students where to go to find what they need to know.

Educators have always acknowledged the importance of providing students with the skills they need to locate information. The traditional route has been to teach the use of the card catalog, Reader's Guide to Periodical Literature, and other specialized reference works.

The information society has added new dimensions to locating information in two ways. First, many of the traditional reference sources have also been added to computerized databases. Second, most of the information needed by business and education is only available in computer databases.

Students need to be taught information gathering skills.

Students must be prepared to function as information-haves in the information society.

Students must understand what information is available, how it is organized, and how information is retrieved.

Students must be taught the searching skills needed to find information, whether it is on a printed page or a magnetic tape.

Success belongs to the information-haves, not the information-have-nots.

Rationale for Student Searching

Students can acquire the skills to work effectively in the information society by being taught online database searching. Students can retrieve information on a research topic online by using one of several information vendors. This teaching process will include how to use a computer to locate bibliographic references. By using a computer to search a database, the students will learn how the bibliographic records are organized and what this organizational structure means for successful retrieval.

The concepts involved in this information retrieval process are based on the research skills currently taught in school. The concepts are expanded and encompass a wider range of skills: critical thinking, inductive and deductive reasoning.

The process for locating information in a printed text is similar to the process for locating information in a computer database. The process may be summarized this way:

1. Write a statement of the problem to be researched.
2. Analyze the problem into its separate concepts or key words.
3. Select the tools or references that are likely to have the answer.
4. Prepare a strategy to search the particular references.
5. Search the references and note the specific citations or materials that solve the problem.
6. Locate additional materials referred to in the original references.

Goals

The educational goals for incorporating online database searching in the curriculum are discussed below.

1. To refine research and thinking skills by formulating search strategies. In order to retrieve relevant references, it is essential to know how to narrow or broaden a search topic.

2. To generate enthusiasm for the research process. Computers have the added edge of being attention-getters. Computers allow students to manipulate large amounts of information that is impossible to do manually.

3. To prepare students for the future. Many universities require access to a computer as a requirement. Online database searching, therefore, logically follows as a requirement.

4. To introduce students to collections in other libraries. There is a wealth of information available for student use, both primary and secondary sources, that students are not aware of through a local library collection. Online database searching gives you access to hundreds of databases worldwide.

5. To introduce students to a new technology. Databases have been around for over 20 years. It is only recently, however, that the cost and means for accessing databases has been eased to the point of making database searching an essential part of one's education and later work experience.

Objectives

At the end of this unit, the student should be able to:

1. Discuss the process on online database searching.
2. Describe Boolean logic as it relates to information organization.
3. List three databases that provide general or specific reference information.
4. Define a research topic by its separate key concepts.
5. Assign related terms, synonyms or phrases to expand or narrow a research topic.
6. Request materials retrieved from a search from a source other than the school media center.

Content

While there are different options available to do online database searching, the skills involved are the same. The goals for online database searching have been addressed. Now, what is the process involved?

The following outline may be revised to correspond to the subject area in which searching is being taught.

Search Steps Outline

I. Introduction
   A. What is a computer database
      1. Arrangement of information
      2. General or specific knowledge areas
      3. Limits on what a database will do
   B. What is a vendor (DIALOG)

II. Equipment
   A. How a modem works
   B. How computers talk to one another

III. DIALOG
   A. Databases
      1. Areas of specialization
         a. General
            1) Magazine Index
            2) National Newspaper Index
            3) Newsearch
         b. Business
         c. Legal
         d. Science and technology
         e. Government documents
         f. Humanities
         g. Education
         h. Sociology and psychology
         i. Medical
   B. Database organization
      1. Bibliographic citations
      2. Abstracts
      3. Full-text articles
      4. Numeric information
   C. Similarity with printed indexes

IV. Search strategy
   A. Define the topic
      1. Write down the search topic in a complete sentence
      2. Identify if current or retrospective material is needed
      3. Identify if you want newspapers, magazines, or specialized information
   B. Identify the key concepts
      1. Concepts are listed across the page
      2. Four concepts, maximum
   C. Assign synonyms and related terms
      1. Synonyms are listed under the key concepts
      2. List specific phrases and terms
      3. List spelling variations
      4. Specify terms <u>not</u> desired
      5. Specify language if appropriate
      6. Specify dates if appropriate
   D. Choose databases to search
   E. Apply logical operators — Boolean logic
   F. Note database or vendor commands

Class Activities

At least four class periods are needed to teach the process on online database searching to a group of high school students. The activities may follow this timeline. Students should work in teams the first time around.

Class 1 activities:

1. Introduce databases, vendors and computer equipment.
2. Demonstrate online searching in order to a) catch the students attention, or b) put the search process in perspective.
3. Review the databases to be searched for this particular class (general or specialized).
4. Summarize the similarities between databases and printed reference such as Reader's Guide.

Class 2 activities:

1. Complete the worksheet.
2. Define the topics to be searched by key concepts and related terms.
3. Apply Boolean logic and limiters.
4. Review search strategies on the worksheets.

Class 3 activities:

1. Run the searches for the students while they watch.

Class 4 activities:

1. Review the search results with the students.
2. Revise and rerun unsuccessful search strategies.
3. Order materials not available from the school collection.

Student Worksheet

The worksheet on the following page should be completed with every search request.

The key concepts of the search topic are listed across the columns. Most student searches are composed of no more than four key concepts.

The synonyms, related terms and spelling variations are listed under each key concept. This listing uses the "OR" Boolean logic under each key concept.

The lower portion of the worksheet is the search strategy with the logical operators (and, or, not) that is entered into the computer.

It cannot be emphasized enough that students must complete all of the worksheet before their search is done online.

This worksheet must be completed before a search will be done.

Name _____

Class _____

HOW TO GET ONLINE

Topic:

Database:

Key Concepts:			
Synonyms:			

Strategy: OR, AND, NOT logic is used to connect sets of words or key concepts.
Example: (_____ OR _____ OR _____) AND (_____ OR _____)

Search Strategy

Sample Information Problem

What are the legal issues involved in the commercial uses of space?

Identifying Key Concepts

The first step in designing a search request is to identify the key concepts related to your information problem. A key concept expresses a main idea in your information problem. A search word expressing a good key concept excludes as many irrelevant database records as possible, yet retrieves as many relevant records as possible.

The information problem is concerned with the legal issues involved in the commercial uses of space. The key concept in this case are SPACE, COMMERCIAL and LEGAL.

SPACE is obviously a key concept, and includes all possible space activities such as satellite communications and lunar mining. By using COMMERCIAL, you exclude records about the military uses of space. By including LEGAL, you can exclude records about the technical aspects of the commercial use of space.

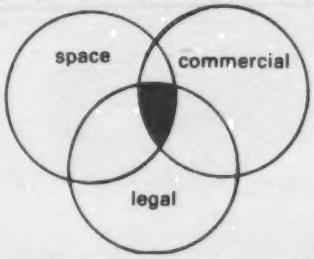
Identifying Relationships Between Search Words

After you identify the search words that best express the key concepts of the problem, you should determine the logical relationships between those words. When you enter your search request, you use logical operators to show these relationships.

The three logical operators you can use in searching a DIALOG database are AND, OR, and NOT.

The records you want to retrieve should have all three search words (SPACE, COMMERCIAL and LEGAL) appearing somewhere within them. That is, you want records containing SPACE and COMMERCIAL and LEGAL.

In the figure below, the left circle represents all the records in the database that contain the word SPACE. The right circle contains all the records that include the word COMMERCIAL. The bottom circle contains all the records that have the word LEGAL. The shaded part of the diagram, identified as SPACE AND COMMERCIAL AND LEGAL, represents those records that contain all three search words.



Note that a search using AND will probably result in fewer retrieved records than a search for any one word alone. The AND places additional restrictions on the content of the records retrieved.

After you identify the key concepts of the problem, you should refine your list of search words to include synonyms, word variations and equivalent terms. The database you select for this search, for example, may contain a record entitled "The Law and Commercial Space Operations," which would not be retrieved unless the word LEGAL appeared somewhere else in the record. You should account for the concept LAW, as well as the concept LEGAL.

A sample student worksheet for this information problem is on the following page. The actual search, as run in two databases in the DIALOG system, follows the sample student worksheet.

This worksheet must be completed before a search will be done.

Name S. Schrader

Class AEA 11

HOW TO GET ONLINE

Topic: What are the legal issues involved in the commercial uses of space?

Database: Legal Resource Index and Magazine Index

Key Concepts:	legal	commercial	space	
Synonyms:	legal	commercial	space	
	law	business		

Strategy: OR, AND, NOT logic is used to connect sets of words or key concepts.
Example: (_____ OR _____ OR _____) AND (_____ OR _____)

(legal? or law? ?) AND (commercial or business?) AND space

```
File150:LEGAL RESOURCE INDEX - 80-85 Ma
(Copr. 1985 IAC)
        Set Items Description
        --- ----- -----------
? SS SPACE * (COMMERCIAL + BUSINESS) * (LEGAL + LAW)
          1   428 SPACE
          2  2640 COMMERCIAL
          3  44 . BUSINESS
          4 17220 LEGAL
          5 75498 LAW
          6    14  1 * (2 OR 3) *(4 OR 5)

? T 6/3/1-5
6/3/1
1986011   DATABASE: LRI File 150
  Federal government regulation of commercial operations using
expendable
launch vehicles.
  Myers, James R.
  J. Space L.   12  40-51  Spr  1984

6/3/2
1985864   DATABASE: LRI File 150
  Liability of private space transportation companies to their
customers.
  Deem, Charles L.
  Ins. Counsel J.   51  340-361  July  1984

6/3/3
1980829   DATABASE: LRI File 150
  The international law of outer space and its effect on commercial
space
activity.
  Trimble, James J.
  Pepperdine L. Rev.   11  521-567  March  1984

6/3/4
1980076   DATABASE. LRI File 150
  Space is the place. (space businesses)
  Slover, William L.
  I.C.C. Prac. J.   51  416  May-June  1984

6/3/5
1951681   DATABASE: LRI File 150
  ILA. (international Law Association)
  Nesgos, Peter D.
  Annals Air & Space L.   7  516-527  Ann  1982
```

```
File47:MAGAZINE INDEX - 1959-Mar 1970, 1973-85/Mar
(Copr. IAC) FMT 9 = $7.00
        Set Items Description
        --- ----- -----------
? SS SPACE * (COMMERCIAL + BUSINESS) * (LEGAL + LAW)
          1 18679 SPACE
          2  5869 COMMERCIAL
          3 22677 BUSINESS
          4  2780 LEGAL
          5 19002 LAW
          6     5  1 * (2 OR 3) *(4 OR 5)

? T 6/3/1-5
6/3/1
1814631   DATABASE: MI File 47
  Patent law finds space applications.
  Kozicharow, Eugene
  Aviation Week   v120  p97(2)  June 25  1984
  CODEN: AWSTA
  illustration; chart

6/3/2
1782004   DATABASE: MI File 47
  House approves Landsat commercialization.
  Aviation Week   v120  p30(1)  April 16  1984
  CODEN: AWSTA

6/3/3
1532290   DATABASE: MI File 47
  Aeronautics wins a round. (economic policy) (editorial)
  Gregory, William H.
  Aviation Week   v117  p11(1)  Nov 22  1982
  CODEN: AWSTA

6/3/4
1270709   DATABASE: MI File 47
  Finding space for new airlines.
  Business Week  p104(2)  Dec 8  1980
  CODEN: BUWEA
  illustration; photograph

6/3/5
0106325   DATABASE: MI File 47
  How business will use outer space; interview. por
  Glennan, T. Keith
  Nation's Business   v48  p44  Oct  1960
  illustration


? LOGOFF
```

Computer Database Vendors and Search Packages

DIALOG's Classroom Instruction Program

DIALOG offers most of their databases at a reduced rate for use by educational institutions who wish to provide formal, supervised instruction about online information retrieval. It is available for all hours of regular DIALOG operations, which are presently over 120 hours per week. The current price is $15 per hour (including telecommunications costs through Telenet, Tymnet, or Uninet). Most of DIALOG's standard search features are also available. There are no offline prints; all citations must be printed while you are online.

Contact:

DIALOG Information Services, Inc.
3460 Hillview Avenue
Palo Alto, CA 94304
1-800-227-1927

Information Access Company's SEARCH HELPER Program

Seven of IAC's databases are available to search on a prepaid basis. Magazine Index, National Newspaper Index, Trade & Industry Index, Legal Resource Index, Management Contents, Computer Database, and Newsearch are the databases you can search. You purchase one of two software packages that allow you to do either 300 searches or 700 searches. The 300 search package is $1050, which translates into a $3.50 cost per search. The 700 search package is $1750, which translates into a $2.50 cost per search. All of the search strategy and typing is done offline at your own speed. The software packages are menu driven, and the search strategy is greatly simplified. You are limited to printing your citations online. On prepaid search consists of 20 citations. If you need 21 citations, that is a second search.

Contact:

Information Access Company
11 Davis Drive
Belmont, CA 94002
1-800-227-8431

Menlo Corporation's In-Search (or Pro-Search) Programs

In-Search is a software program that is compatible only with the IBM-PC. All of DIALOG's databases are accessible. All search strategy and typing is done offline. The program is menu-driven, and the search strategy is somewhat simplified. The programs are in the $400-$500 range.

Pro-Search is a new version that accesses BRS databases in addition to DIALOG.

Contact:

Menlo Corporation
4633 Old Ironsides, Suite 400
Santa Clara, CA 95050
408-986-0200

WILSONLINE RETRIEVAL SYSTEM from H.W. Wilson

WILSONLINE provides online access to 15 Wilson indexes (includng Education Index and Reader's Guide). The price structure depends on which indexes you subscribe to in hard copy.

Contact:

The H.W. Wilson Company
950 University Avenue
Bronx, N.Y. 10452
212-588-8400

MICROSearch from ERIC

MICROSearch permits the users to search portions of the ERIC database offline on floppy disks; thereby giving limited search experience with no online or telecommunications costs. You purchase disks that have the citations and abstracts from ERIC. The subject disks that are now available are on: Library/Information Science, Educational Technology, Computer Literacy, and Microcomputer Hardware/Software Evaluation. The subjects, of course, may not be suitable or of interest to high school students. The cost per subject disk ranges from $6 to $36. The software is Apple compatible.

(This program is not to be confused with the MICROSEARCH database on The SOURCE which indexes journal articles on microcomputers.)

Contact:

The ERIC Clearinghouse of Information Resources
School of Education
Syracuse University
Syracuse, N.Y. 13210
315-423-3640

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In-Search Manual, Menlo, CA: Menlo Corporation, 1984.

Mancall, Jacqueline. "Training Students to Search Online: Rationale Process, and Implications," Drexel Library Quarterly, V. 20, No. 1, Winter, 1984.

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Sanacore, Joseph. "Locating Information: the Process Method," Journal of Reading, V. 18, No. 3, December, 1974.